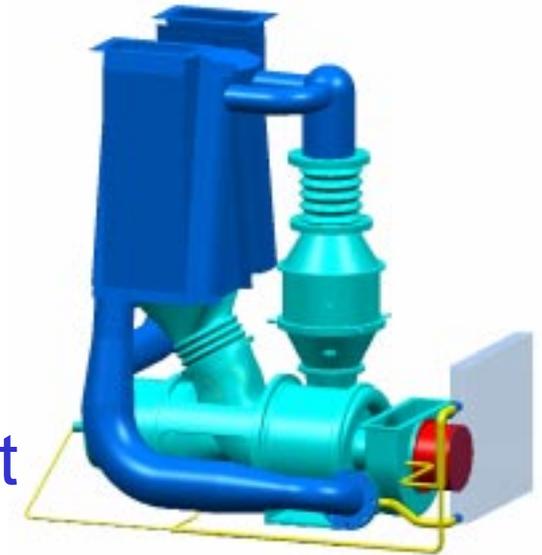
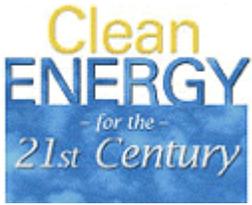


UTC - Advanced Microturbine Program



- DOE Funding: \$8.6 M over 5 years
- Partners: UTRC, DTE Energy, P&W Canada, TurboGenset, Hamilton Sundstrand, SatCon, Kyocera, ORNL, Solar Turbines
- Approach: Demonstrate new product capability of enhanced ENT-4000 microturbine system
 - 400-kW class recuperated microturbine based on PWC ST5 engine, 30% electrical efficiency
 - Launched in July 2000 through partnership of DTE Energy Technologies, P&W Canada, and TurboGenset
 - Initial product delivery in March 2002





UTC Advanced Microturbine System: Approach



- **Approach:**
 - Identify & develop technologies to achieve DOE goals for electrical efficiency, NO_x, cost, and life
 - Demonstrate performance on test-stand, and durability in microgrid
- **3-Part Strategy for >40% Electrical Efficiency**
 - Increase RIT using uncooled, ceramic hot section components
 - Increase power generation/conversion efficiency
 - Convert exhaust energy with Organic Rankine Cycle (ORC)
- **Preserve low NO_x with affordable, small-scale fuel-air mixers**